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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/733,841	12/07/2000	William L. Betts	061607-1330	2445

7590 09/14/2004  
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EXAMINER

BAYARD, EMMANUEL

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 09/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/733,841

Applicant(s)

BETTS, WILLIAM L.

Examiner

Emmanuel Bayard

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

This is in response to amendment filed on 8/16/04 in which claims 1-28 are pending. The applicant's amendments have been fully considered but they are moot based on the new ground of rejection. Therefore this case is made final.

#### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jebwab et al U.S. Patent NO 6,487,258 B1 in view of Wu U.S. Patent No 6,389,062 B1.

As per claim 1, Jedwab et al et al discloses an apparatus for equalizing a discrete multi-tone transmit spectrum comprising: a DMT transmitter configured to generate a plurality of DMT carriers tones (see fig.6 element 46 and col.1, line 37 and col.6, lines 36-40) and combining the plurality of carriers tones into symbol and transmit the symbol (see fig.5 element 36 and col.6, lines 26-30); and a receive amplifier configured to separate the detected the transmit symbol (see fig.6 element 48 and col.6, line 42); a FFT is the same as the claimed (discrete Fourier transform) element configured to separate the transmit symbol into the plurality of carriers tones (see fig.6 element 52 and col.6, lines 45-46);).

However Jebwab et al does not teach apply a gain to each transmit DMT and providing a gain adjustment element configured to adjust the gain applied to at least one of the plurality of transmit DMT carriers tones based on a predetermined transmit signal spectrum associated with

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the at least one carrier tone and on a power measurement of the at least one of the received carrier tones.

WU et al teaches teach apply a gain to each transmit DMT and providing a gain adjustment element configured to adjust the gain applied to at least one of the plurality of transmit DMT carriers tones based on a predetermined transmit signal spectrum associated with the at least one carrier tone and on a power measurement of the at least one of the received carrier tones (see fig.9 elements 70r, 70c and col.17, lines 30-55).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wu into Jebwab as to measure the variances noise of each tone as taught by Wu (see col.17, lines 45-46).

As per claim 2, Jebwab and Wu in combination would include independently adjusting each carrier as to measure the variances noise of each tone as taught by Wu.

As per claim 3, Jebwab and Wu would include power measurement and gain scalar as to measure the variances noise of each tone as taught by Wu.

As per claim 4, Jebwab et al teach a receive amplifier to monitor local line (see fig.6 element 48).

As per claims 5 and 6, it would have been to one of ordinary skill in the art to implement a start-up sequence to transmit symbol prior or after the start-up sequence into Jewab as accurately determine the bit/gain distribution process.

As per claims 7 and 8, Jebwab does teach encoding the DMT carrier tones in a constellation (see fig.6 element 30). Furthermore implementing such teaching into a square or

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circular constellation would have been obvious to one skilled in the art as to control the data rate of the interleave data and supplies the interleave to the tone ordering section.

As per claims 9, 17 and 25, Jebwab discloses a method or apparatus for equalizing a discrete multi-tone (DMT) transmit spectrum, comprising: generating a plurality of transmit DMT carrier tones (see fig.6 element 46 and col.1, line 37 and col.6, lines 36-40); combining the plurality of carriers tones into symbol and transmit the symbol (see fig.5 element 36 and col.6, lines 26-30); detecting the transmit symbol (see fig.6 element 48 and col.6, line 42); a FFT is the same as the claimed (separating the transmit symbol into the plurality of carriers tones) (see fig.6 element 52 and col.6, lines 45-46).

However Jebwab et al does not teach applying a gain to each transmit DMT and adjusting the gain adjustment element configured to adjust the gain applied to at least one of the plurality of transmit DMT carriers tones based on a predetermined transmit signal spectrum associated with the at least one carrier tone and on a power measurement of the at least one of the received carrier tones.

WU et al teaches teach applying a gain to each transmit DMT and adjusting the gain adjustment element configured to adjust the gain applied to at least one of the plurality of transmit DMT carriers tones based on a predetermined transmit signal spectrum associated with the at least one carrier tone and on a power measurement of the at least one of the received carrier tones (see fig.9 elements 70r, 70c and col.17, lines 30-55).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Wu into Jebwab as to measure the variances noise of each tone as taught by Wu (see col.17, lines 45-46).

As per claims 10 and 18, Wu does teach calculating a power level for each of the tones (see col.17, lines 30-35) and adjusting the power level of each tone to match the predetermined power level. Furthermore implementing a step of comparing the power level of each tone with a predetermined power level into Jewab and Wu would have been obvious to one skill in the art as to reduce noise and interference in the carrier tone signals.

As per claims 11 and 19, Jebwab and Wu would include gain scalars as to measure the variances noise of each tone as taught by Wu.

As per claims 12 and 20, Jebwab would have taught a step of monitoring a communication line to detect impedance variations, where the adjusting step is responsive to the impedance variations as to accurately reduce noise and symbols interference in the carrier tones.

As per claims 13, 14, 21 and 22, it would have been to one of ordinary skill in the art to implement a start-up sequence to transmit symbol prior or after the start-up sequence into Jewab as to accurately determine the bit/gain distribution process.

As per claims 15, 16, 23 and 24, Jebwab does teach encoding the DMT carrier tones in a constellation (see fig.6 element 30). Furthermore implementing such teaching into a square or circular constellation would have been obvious to one skilled in the art as to control the data rate of the interleave data and supplies the interleave to the tone ordering section.

As per claim 26, Jebwab would teach a quadrature amplitude modulation (QAM) modulated single carrier as to accurately determine the gain distribution process..

As per claim 27, Jebwab would have taught a carrier less 2 amplitude/phase (CAP) modulated single carrier device as to accurately determine the gain distribution of the carrier tones.

As per claim 28, Jebwab and Wu in combination teach adjusting a power level associated with each of the plurality of frequencies based on a predefined transmit signal spectrum comprises a finite impulse response filter as accurately reduce noise and interference in the carrier tones.

### ***Conclusion***

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Hwang U.S. patent No 6,498,807 B1 teaches a method and apparatus for transmitting data..

Nabicht et al U.S. Patent No 6,621,346 B1 an impedance matching.

Hwang U.S. Patent nO 6,498,807 B1.

Levin et al U.S. Patent NO 6,625,777 B1 teaches a method of identifying an improved configuration.

Ibrahim et al U.S. Patent no 6,563,864 B1 teaches a residential power cutback.

Polley et al U.S. patent No 6,618,480 B1 teaches DAC architecture for analog echo cancellation.

Matsumoto U.S. patent No 6,522,731 B1 teaches a data communication apparatus.

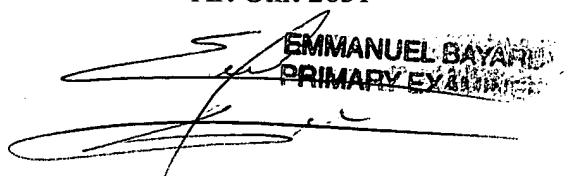
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016.

The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 571 272 3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Emmanuel Bayard  
Primary Examiner  
Art Unit 2631



EMMANUEL BAYARD  
PRIMARY EXAMINER



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9/9/04